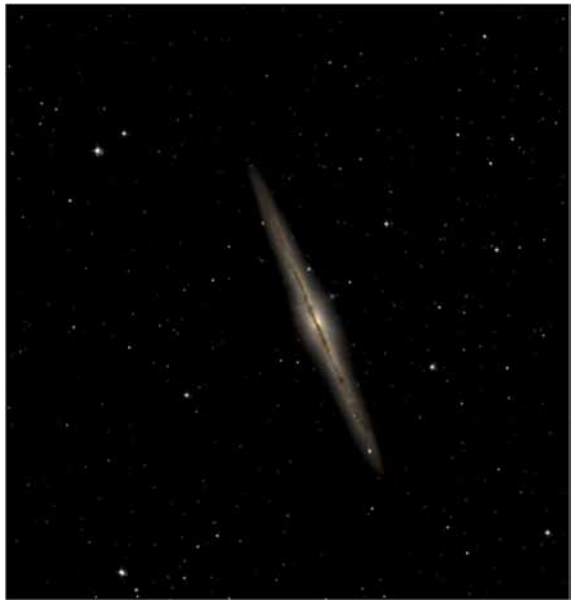
# XML - James Webb Space Telescope

Ryan Detter GSFC/NASA
Code 584

ISD Technology Workshop

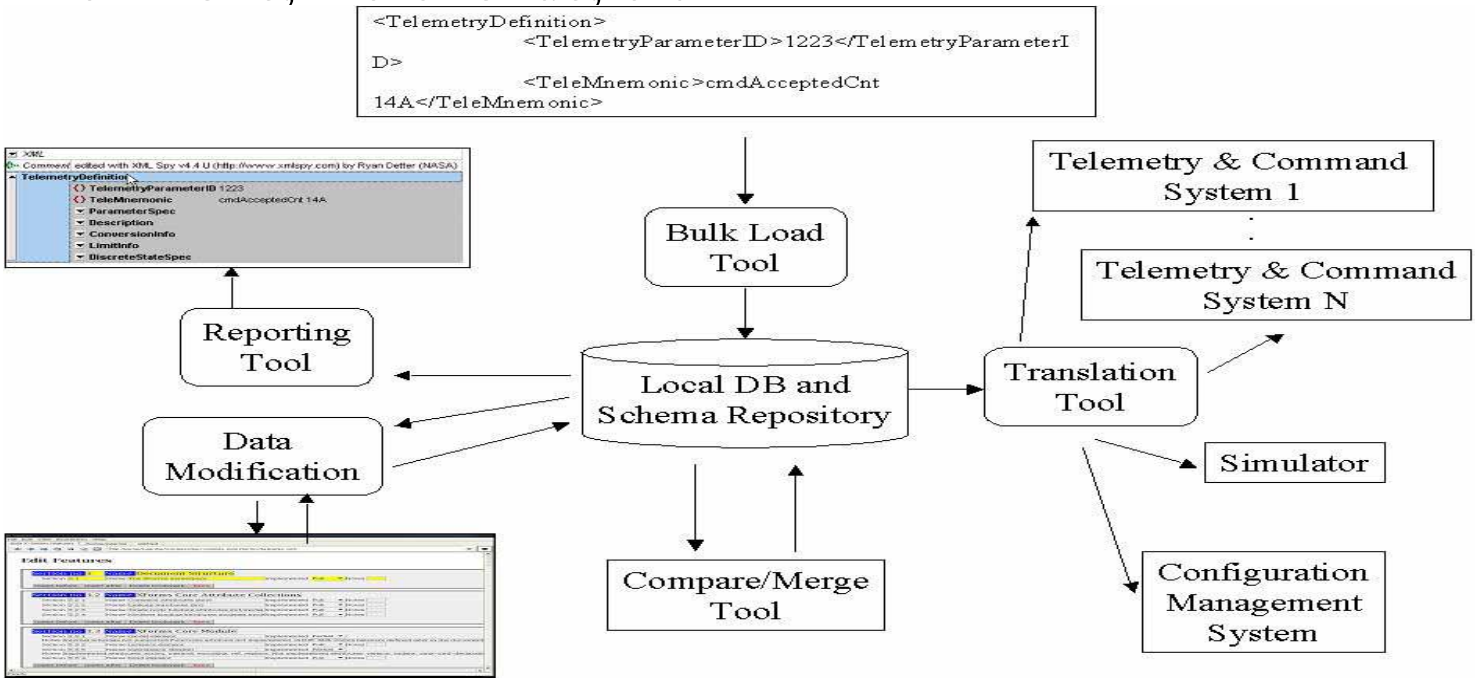


First image on JWST flight prototype near-infrared detectors

Paper 1130

# JWST Database Goals and Objectives

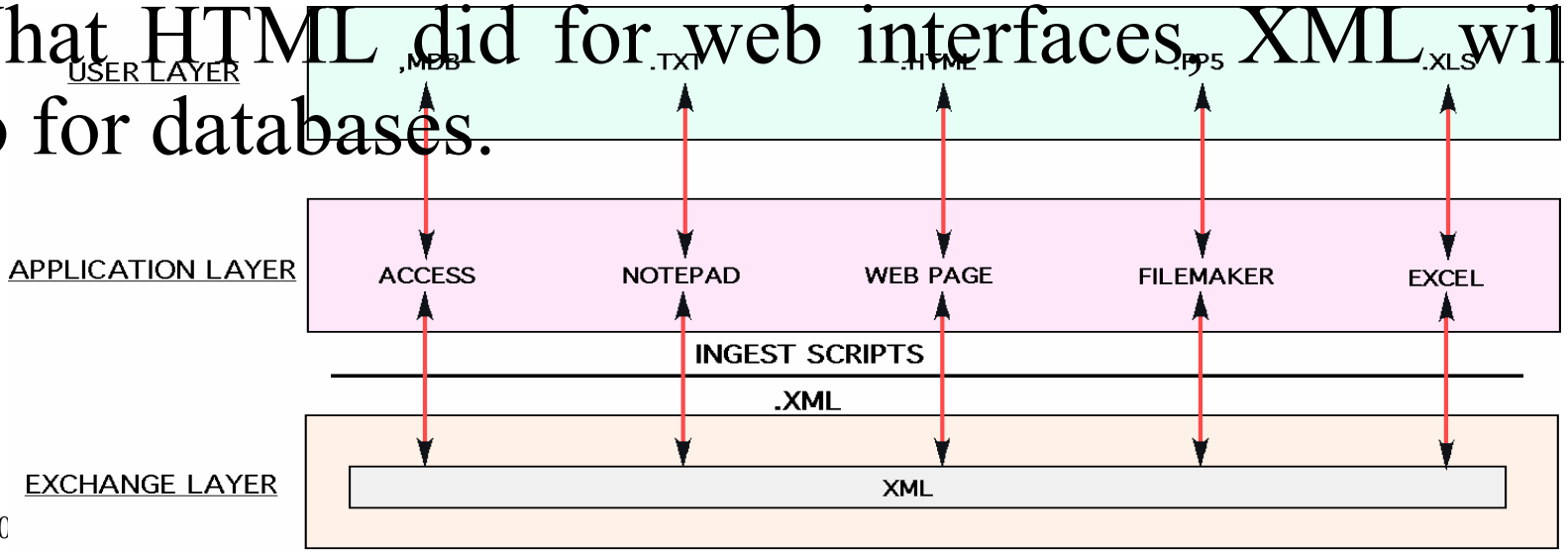
- The initial database and ground system elements will be used for 19 years, plus post mission activities.
- Planned for 10-20 thousand command and telemetry items, plus many thousand other database items, pages, scripts, calibrations, table loads, etc




Paper 1130

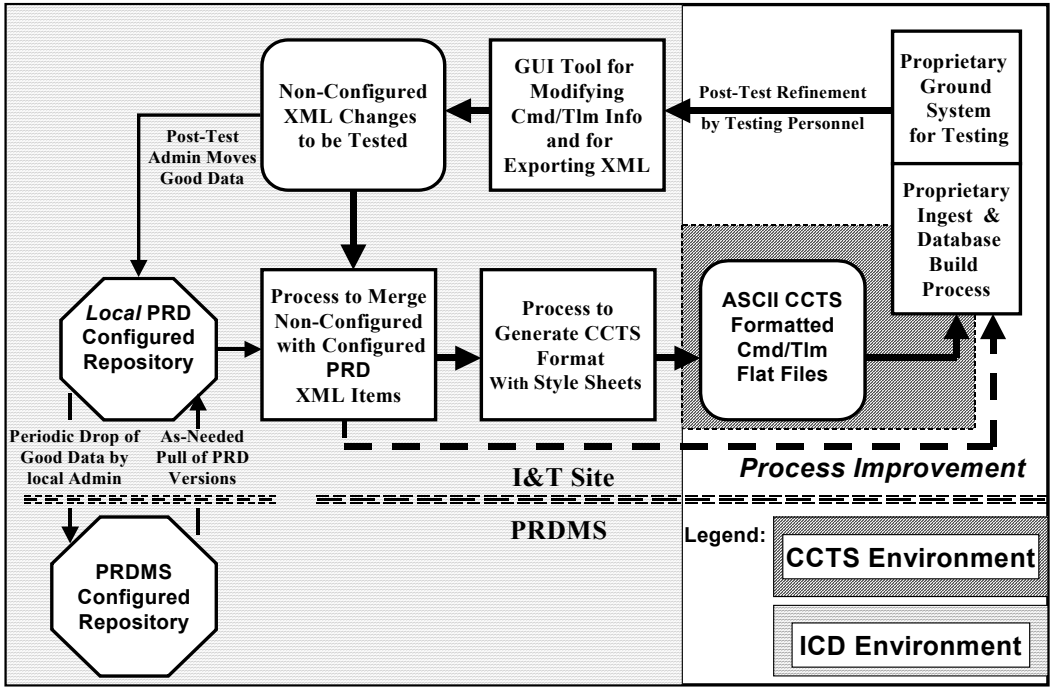
# Benefits

- Provide a JWST database, independent of any portion of the ground system, yet still compatible with the various systems.
- Provided the flexibility desired from a database in an infant state, and sure to evolve drastically.
- What HTML did for web interfaces, XML will do for databases.

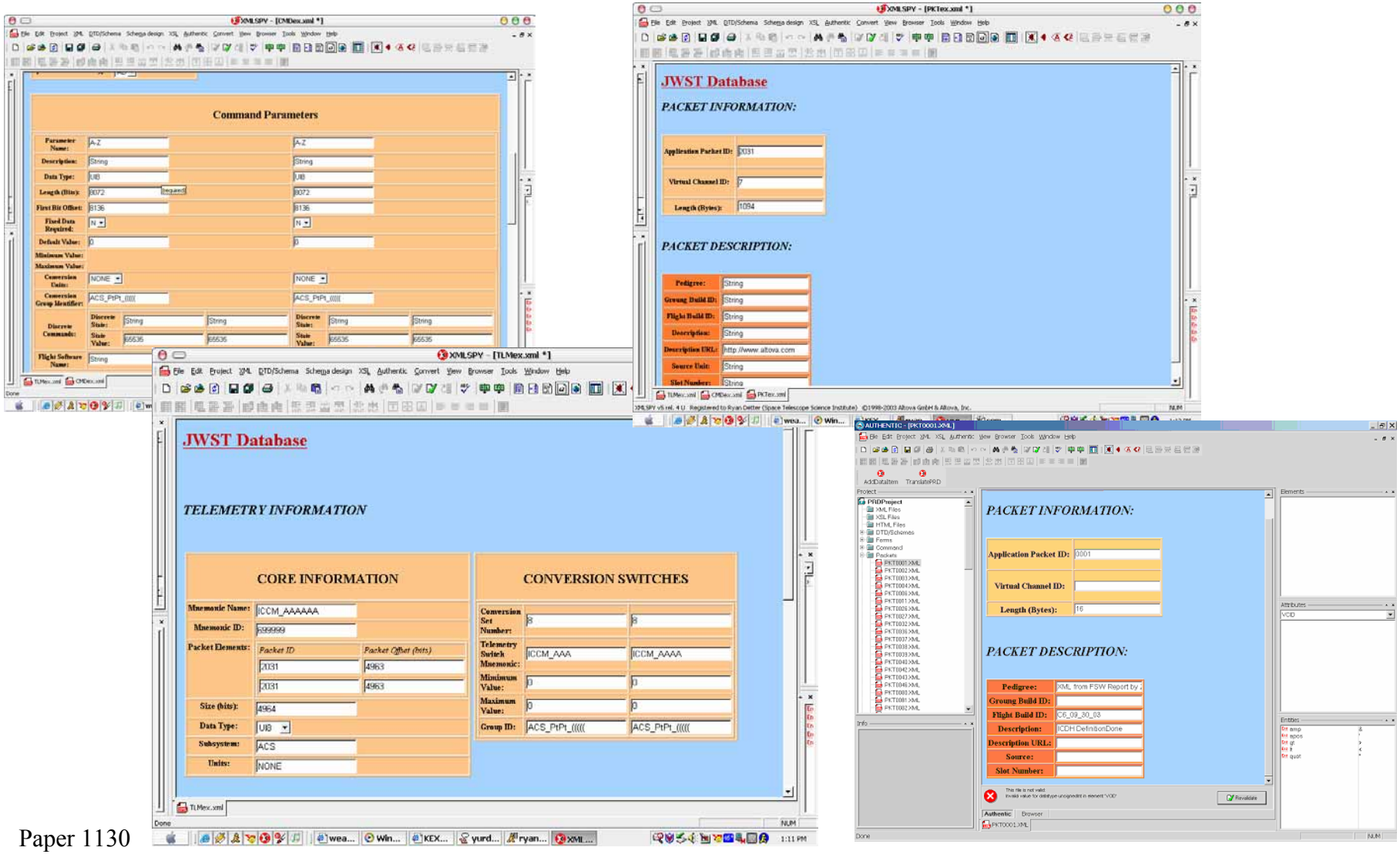


# User Database Process

- During the Integration and Test (I&T) phases of the JWST development, 24 distinct laboratories, will have local database tools with an XML database.
- Central database repository and 'Golden Copies" at STScI in Baltimore, Maryland.
- The main issue in this process is who constructs the translation tools from XML to custom formats.



# Database User Input

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# Database Validation

- On JWST the goal is to provide as much validation at the user interface, to reduce errors on database submittal.
- To track and create each item at the lowest level.
  - In the stylesheets

```
<xsl:for-each select="/DB/TlmUnit">
    <xsl:sort select="TlmIdentifier"/>
      <xsl:variable name="decommword">
       <xsl:value-of select="TlmCoreElements/TlmPktElements/PktOffsetInBits div 8"/>
      </xsl:variable>
      <xsl:variable name="chunkcnt" select="floor((TlmCoreElements/SizeInBits div 8) div 50)"/>
      <xsl:variable name="remainder" select="(TlmCoreElements/SizeInBits div 8) - ($chunkcnt * 50)"/>
        <xsl:call-template name="octetloop">
           <xsl:with-param name="chunkcnt" select="$chunkcnt"/>
           <xsl:with-param name="remainder" select="$remainder"/>
           <xsl:with-param name="decommword" select="$decommword"/>
        </xsl:call-template>
    </xsl:for-each>
```

# XML Database Tools

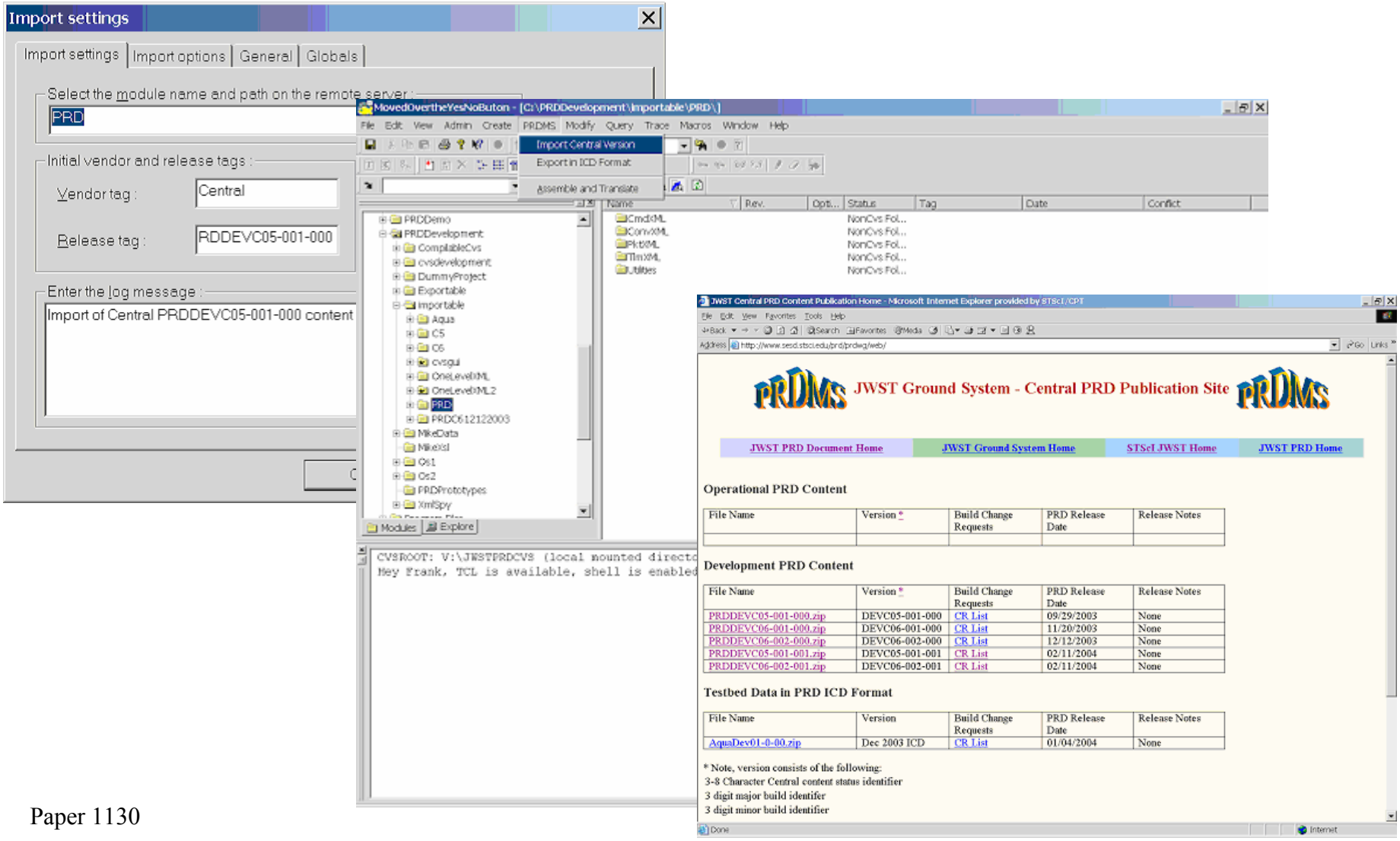
- XML allows for easier integration with COTS than in the past because it is an international recognized standard that is implemented throughout industry.
- COTS tools currently being used are:
  - winCVS
  - CVS
  - XMLspy

# Summary

- XML is an open standard data exchange format that is compatible with many current database products
- XML is low cost since lots of COTS tools, including freeware, are available
- Users never see the XML, they did not believe this until shown
- Delivers real-time validation as developers create data items
- Translates from one standard format to many data input formats with ease

# Back-Up Slides

# Database Import

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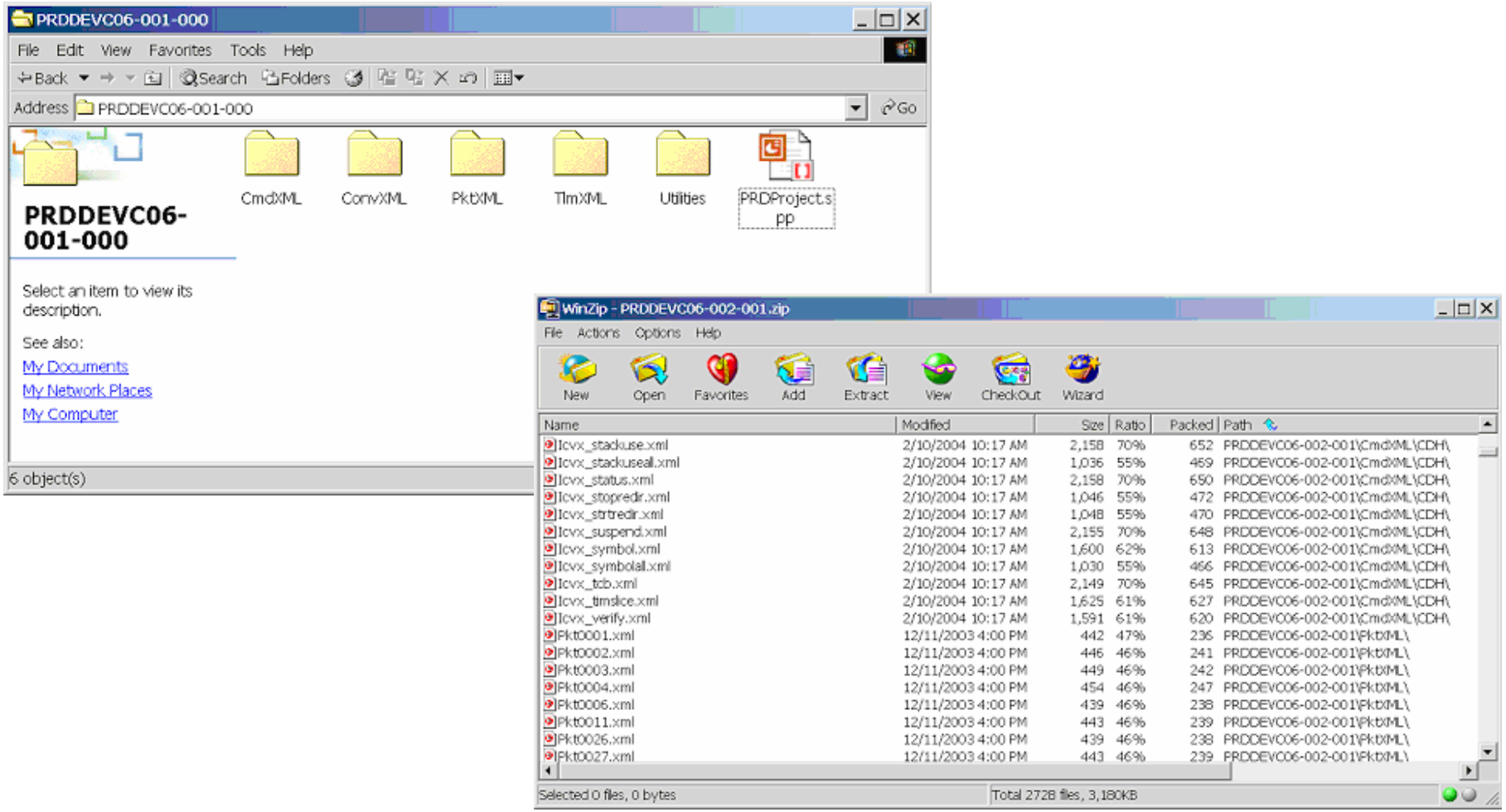
# Database XML files



# Database Validation

– In the Schemas